Invention Disclosure Form ⌣stem

INVENTION DISCLOSURE

1. INVENTOR(S):

Kristy A Campbell

2. DESCRIPTION:

- **Title:**

  Improved Performance PCRAM Cell

- **Brief Description:**

  The best PCRAM material to date has been from lot 0942611 (██). This material was the first 'sandwich stack' structure. It had a silver top electrode which limited its maximum functional temperature of operation due to silver diffusion from the top electrode into the cell, thus poisoning the devices. Since probing this lot, we have tried to duplicate this material by assuming (as requested on the traveler) that the structure was Ge40Se60/Ag2Se/Ag2Se/Ge40Se60/Ag (top electrode). However, further investigation of notes and documents accompanying this lot, led me to believe that the second Ag2Se layer was actually a thin evaporated layer of Ag. An experiment was started to repeat this stack using a thin Ag layer. This lot (2647285) showed functioning devices with no surface defects using a thin layer of Ag evaporated above the Ag2Se layer; the highest yield wafers from this lot had this structure.

  This experiment covers the formation of the PCRAM stack structure by evaporating a layer of silver above the Ag2Se layer. This technique has been shown to work (lot 2647285) and is not currently covered in our stack patent (███████). The advantages of this method are that one can add the correct amount of silver directly to the Ag2Se layer rather than trying to
  put it under the top electrode. In this way, the devices are faster, more temperature resilient and have better cycling endurance.

3. CONCEPTION & DOCUMENTATION OF INVENTION:

- **Date when first conceived:**

  ████████

- **To whom was the idea first described:**

  Allen McTeer and Jiutao Li

- **On what date:**

  ████████

- **Date of the first tangible record:**

  ███████

- **Type and location:**

  PCRAM experiment request documentation.

4. INFORMATION RELATED TO INVENTION:

- **Related invention disclosures:**

  Disclosures: ████████ describes the Ag2Se/Ge40Se60 structure.
  ████████ describes the Ge40Se60/Ag2Se/Ge40Se60 structure.

- **Closest technology:**

  None.

- **Advantages of this invention over previous technology:**

  Faster speed, improved thermal stability.

5. IMPORTANT DATES:

- **If the invention has been disclosed outside the company, please specify to whom it has been disclosed, when, and in what form:**

  Not disclosed.

- **If any articles describing your invention have been published, please specify the author(s), title of article, publication and date:**

  None published.

- **If any engineering samples have been given out, please specify to whom and on what date they were given:**

  pieces of 0942611 were given to Kozicki in ████.

- **If any product using the invention has been sold or offered for sale, please specify to whom and on what date:**

  not offered for sale.

6. DISPOSITION OF THE INVENTION:

- **When will (or did) Micron begin use of the invention experimentally:**

  ████

- **When will (or did) Micron begin production of this invention:**

TBD

7. MISCELLANEOUS INFORMATION:

• ARPA project:

• Was the invention developed during a joint development agreement or other contract with an outside company:

No.

• List developmental work outside of the company, including Government proposal or contract:

None.

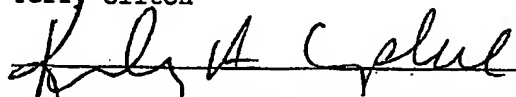• This disclosure originated from work on the project:

PCRAM

• Has the subject matter of this disclosure been disclosed to any standards setting organization(JEDEC;IEEE;etc.):

No.

8. INVENTORS:

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```
          Name : Kristy A Campbell
   Home Address : P.O. Box 191171
          City : Boise      State : ID     Zipcode : 83719
   Citizenship : US
       Company : Micron Technology, Inc.
  Work Phone # : 363-12493    Mail Stop : 306
     Dept Name : R&D      Dept # : 861
    Supervisor : Terry Gilton

     Signature : _____        Date : ⬛⬛⬛⬛⬛
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(All inventors must sign and date this disclosure form before it can be ac

9. WITNESS:

A witness should sign and date this disclosure. A witness in this case is a non-inventor who understands the nature of the invention and can corroborate the inventor(s) conception of the invention.

_____   _____/_____/_____
      (Signature of Witness)   (Date)

Note: If you have any questions or you need assistance completing this form, please call the Patent Department, ext. 84520.